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Axial setting device

Claims

1. Axial setting device for actuating a multi-plate coupling in the driveline of a motor vehicle, comprising a housing (4) and a ball ramp assembly (1) centred and arranged on a longitudinal axis (A) and having a supporting disc (17) axially and radially secured in the housing (4), as well as a setting disc (16) which is axially movable relative to said supporting disc (17), wherein the supporting disc (17) is rotationally secured in the housing (4) and comprises first ball grooves (24) with a circumferentially variable depth in a first side face (23), wherein the setting disc (16) which is axially arranged between the supporting disc (17) and the multi-plate coupling (2) is rotatably drivable and comprises second ball grooves (26) with a circumferentially variable depth in a second side face (25) arranged opposite the first side face (23), wherein each first and second ball groove (24, 26) form a pair and wherein the ball grooves (24, 26) of each pair comprise pitches being inclined in opposite directions and jointly accommodate a ball (27), and wherein the setting disc (16), on one side, is axially supported at least indirectly against the multi-plate coupling (2) and, on the other side, is axially and radially supported by the balls (27) held in the ball grooves (24, 26).

2. An axial setting device according to claim 1,

characterised in

that the supporting disc (17) is connected to the housing (4) in a rotationally fast way.

3. An axial setting device according to claim 2,

characterised in

that the supporting disc (17) is produced so as to be integral with the housing (4), wherein the ball grooves (24) are formed into the housing (4).

4. An axial setting device according to claim 2,

characterised in

that the supporting disc (17), by means of an inner circumferential face (19), is arranged on a sleeve-shaped projection (21) of the housing (4).

5. An axial setting device according to claim 2,

characterised in

that the supporting disc (17), by means of an outer circumferential face, is inserted into a recess of the housing (4).

6. An axial setting device according to claim 4 or 5,

characterised in

that the supporting disc (17) is connected to the housing (4) in a force-locking way, more particularly by means of a press fit.

7. An axial setting device according to claim 4 or 5,

characterised in

that the supporting disc (17) is connected to the housing (4) in a form-fitting way.

8. An axial setting device according to claim 1,

characterised in

that the setting disc (16), when moving forward, can be operated for loading the multi-plate coupling (2) and when moving backwards, can be operated for releasing the multi-plate coupling (2), wherein there are provided spring means (32) which - after an end position of the balls (27) in the ball grooves (24, 26) has been reached, which end position, during the return movement, is constituted by end stops - permit resilient overshooting of the setting disc (16) together with the supporting disc (17) relative to the housing (4).

9. An axial setting device according to claim 8,

characterised in

that the supporting disc (17) is held in a rotationally secured way between a rotary stop (35) in the housing (4) and the spring means (32) supported in the housing (4), wherein the supporting disc (17), when overshooting, abuts against the spring means (32).

10. An axial setting device according to claim 8 or 9,

characterised in

that the spring means (32) are formed by a helical pressure spring which is arranged tangentially relative to the supporting disc (17) and which cooperates with a cam (34) attached to the supporting disc (17).